Tube Screamer to Octave Screamer

– Or What Am I Gonna Do With These Parts?

I recently prototyped a Tube Screamer type circuit to refresh my memory about the sound of this pedal. I used a borrowed TS-808 and a Pro Reverb in the mid 80s for several weeks while my modded Twin Reverb was being fixed and I remembered it sounding pretty good for a pedal, but not as good as the Twin. The Twin had a Boogie style preamp using the normal channel, so this isn't a big surprise. Anyway, now that I know how all this stuff works I decided maybe I could get more out of the TS.

My initial plan was to build something like Jack Orman's Son of Screamer (see http://www.muzique.com/amz/scream.htm). Using a TL071 opamps for both the clipping module and tone controls, I tried various mods to the clipping module and various types of tone controls and the final results sounded OK, about like I remembered. Since I probably wouldn't use it even after the mods I was left wondering what to do now with all the parts and the Hammond box I ordered at the start of the project. I didn't have an octave pedal at that point, so I started experimenting with using the TS as a front end for the octave creating full wave rectification circuits.

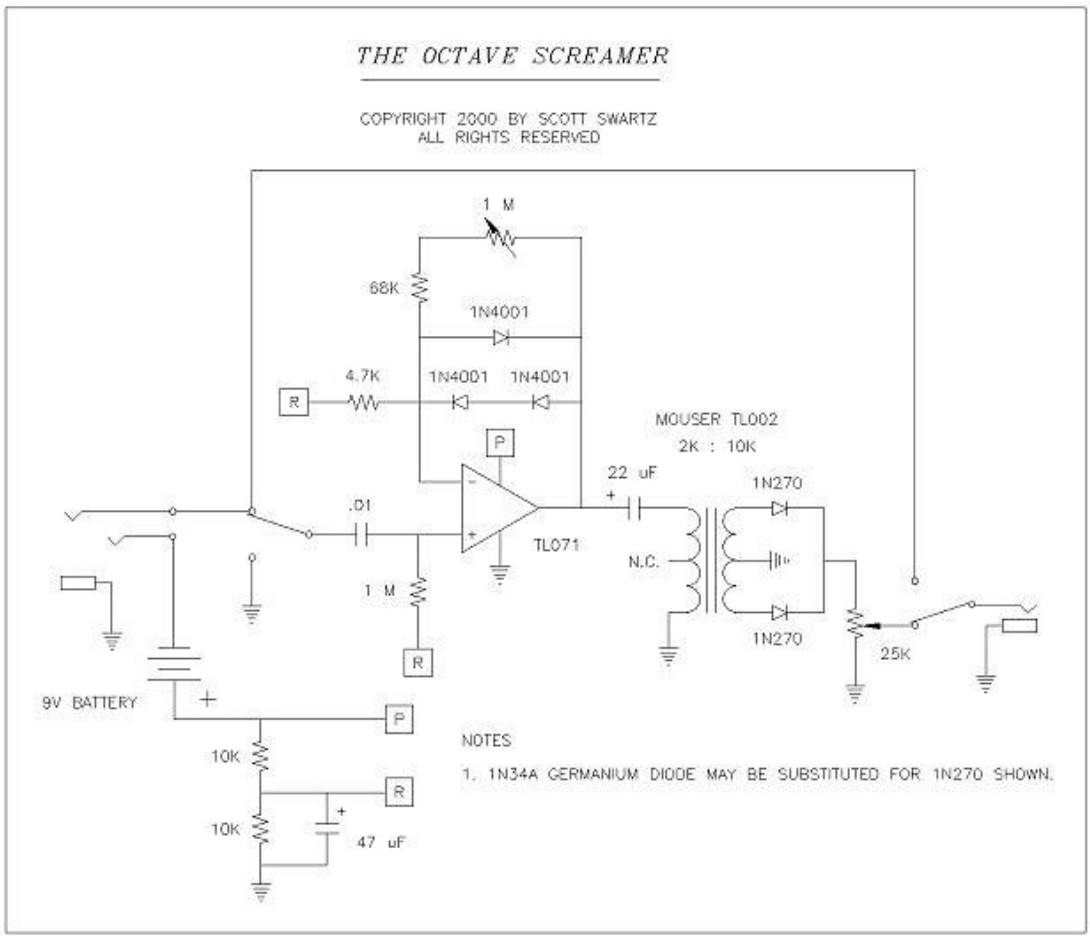
I tried the Foxx Tone Machine style and also the Tychobrahe style with the transformer. The Tycho circuit coupled to the TS front end sounds great!!! I used only the clipping module of the TS, requiring only a single opamp. I eliminated the tone controls after the clipping module since they didn't seem necessary on the rectified signal. Of course as on most octave pedals, the best sounds are had by using the front pickup and turning down the tone control on the guitar. There is a good discussion of this at the Plate to Plate website - http://www.geocities.com/SunsetStrip/Studio/2987/octave.html. I tried the circuit shown there for a low pass filter and it does work, but I preferred the overall tone created by using the guitar tone control to roll off the highs. [See the schematic below - Ed.]

Note that the octave module consists of only five parts – input capacitor, transformer, two germanium diodes, and an output volume pot. The logical extension of this idea would be to add a DPDT switch so the signal could be routed to either the octave circuit or the TS tone controls. Each path ends with a volume control and the switch selects which output connects to the output jack. A switchable octave mode could be added to any distortion pedal in this manner.

I used a Mouser TL002 transformer, 10K:2K rated 75 mW. The 2K winding is used as the primary. The pedal is unity gain as compared to the bypass mode with the output volume set at its midpoint. If you change the feedback diodes, the available output level will change and may require use of a different transformer.

You will note a few changes on the clipping module from the Son of Screamer or the Tube Screamer; Smaller input capacitor, no 47 pF cap in the feedback loop, different diode arrangement, 1 meg drive pot, removal of .047 cap that limits bass, etc. These changes improved the basic distorted tone, in my opinion. You can experiment with all these.

Overall, I am very happy with the results, even if it wasn't what I originally set out to do.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1 M
68K
1N4001
4.7K
1N4001
1N4001
R
P
MOUSER TL002
2K : 10K
22 uF
1N270
.01
TL071
N.C.
1 M
R
1N270
25K
9V BATTERY
P
NOTES
1. 1N34A GERMANIUM DIODE MAY BE SUBSTITUTED FOR 1N270 SHOWN.
10K
R
10K
47 uF